

## PATENT ABSTRACTS OF JAPAN

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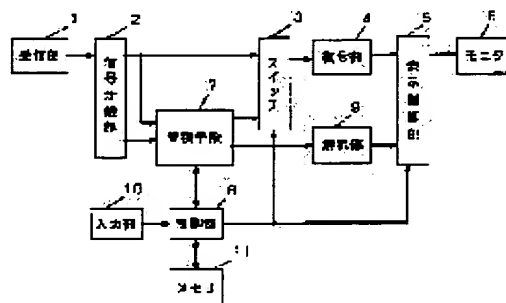
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## (54) RECEIVER FOR DATA BROADCASTING

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To select a candidate to be preferentially deleted from program data already viewed by a user when accumulated capacity approaches a filled state, to inform the user viewing a current program of the program data of the selected deletion candidate through a monitor screen, and when the user does not require the deletion of the program indicated as the deletion candidate, to select a deletion candidate again from programs and data other than the selected deletion candidate.

**SOLUTION:** The receiver is provided with an accumulating means 7 for accumulating video and sound data, software data, etc., a memory means 11 for storing information indicating storage priority and the existence of the necessity to be viewed and a viewed range and a deletion candidate and a control part 8 for controlling these means 7, 11. When the free area of the means 7 becomes less than a fixed value, the means 8 preferentially selects, if any, viewed program data as a deletion candidate, and when there is no viewed program data, selects program data of lowest storage priority as a deletion candidate, displays that the program data are the deletion candidate on the screen of a monitor to inform a user of the program to be deleted next.



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[0012]

[EMBODIMENT OF THE PRESENT INVENTION]

In the receiver for data broadcasting according to the present invention, the control means writes the information indicating the deletion candidate stored in the storing means and having the lowest storage priority, when the free area of the accumulating means becomes less than a fixed value, and displays on the monitor screen that the corresponding data is the deletion candidate, if the information indicating the deletion candidate is written. Here, the user realizes that there is little free space left in the accumulating means, so that the user can notice the data that is to be deleted next, and hence, the user can make an operation for deleting the data other than the above-mentioned data by the input means.

[0013]

If the user takes no action, the control means deletes the corresponding data from the accumulating means, when a predetermined time has elapsed after the information indicating the deletion candidate is written.

[0014]

In the present invention, the control means displays the list of the accumulated data on the monitor screen, and if the information indicating the deletion candidate is written, it

makes the area corresponding to the information on the monitor screen flickered to let the viewer to know that there is little free space left, with the result that the user can notice the data to be deleted next.

[0015]

(EMBODIMENT 1)

The embodiment of the present invention will be explained with reference to drawings. Fig. 1 is a block diagram showing a receiver for data broadcasting according to one embodiment of the present invention. The configuration of the embodiment will be explained with reference to this figure.

[0016]

As shown in Fig. 1, a broadcasting signal received by a receiving section 1 is supplied to a signal separating means 2, whereby it is separated into video and sound data and software data. The separated video/sound data is decoded at a decoding section 4 via a switch 3, and outputted to a monitor 6 via a display control section 5. The video/sound data supplied to the decoding section 4 is also supplied to accumulating means 7 and accumulated therein. A control section 8 gives an instruction for the output and deletion of the data accumulated in the accumulating means 7. The switch 3 is changed by the control section 8, and the data outputted from the accumulating means 7 is supplied to the decoding section 4. The data such as software separated by the signal separating section 2 is

temporarily accumulated in the accumulating means 7. The data such as software accumulated in the accumulating means 7 is outputted from the accumulating means 7 by the instruction from the control section 8, interpreted by an interpreting section 9, and outputted to the monitor 6 through the display control section 5. An input section 9 that inputs an instruction from a user and a memory means 11 are also connected to the control section 8, wherein the memory means 11 stores data of a deletion candidate flag as the information indicating storage priority, whether the data is viewed or not, a viewed range, and a deletion candidate.

[0017]

The operation of the embodiment will be explained next. The broadcasting signal is separated into the video/sound data and the data such as software by the signal separating section 2, and supplied to the accumulating means 7 and accumulated therein. When the free space of the accumulating means 7 becomes less than a fixed value, the information indicating whether the data is viewed or not stored in the memory means 11 is checked, and if there is program data that has already been viewed, the deletion candidate flag of the corresponding data is preferentially set ON. If there is no program data that has already been viewed and there is program data that is being viewed, the deletion candidate flag of the corresponding data is turned ON. There is no program data that has already been viewed and

data that is being viewed, the deletion candidate flag of the program data, having the lowest storage priority, among program data pieces that have not yet been viewed is turned ON. The control section 9 displays the list of the accumulated program data on the monitor screen. When the deletion flag is turned ON, it makes the area of the corresponding program data on the monitor screen flickered to let the user to know that the above-mentioned program data is the deletion candidate.

[0018]

If the user wishes that the program data is not deleted, the user can select whether he/she views the data through the input section 10. If the data is viewed, the information stored in the memory means 11 indicates that the data is being viewed, so that the deletion flag is turned OFF and the control means 9 again selects the deletion candidate. If the user selects that the he/she does not view the data, and a predetermined time has elapsed with the deletion candidate flag turned ON, the control section 9 deletes the corresponding program data from the accumulating means 7. Note that, in the case of the program data that is being viewed, only the viewed range is deleted, and the part that has not yet been viewed is not deleted.

[0019]

For example, as shown in Fig. 2, the program data pieces having the first to fourth recording orders are accumulated in the accumulating means 7, and as a result, the free capacity

of the accumulating means 7 becomes less than a fixed value. When the program data having the fifth recording order is accumulated next, the control section 8 turns ON the deletion flag of the recording data that has the fourth recording order and that has already been viewed. If the user again views the program data having the fourth recording order through the input section 10, the control section 8 turns OFF the deletion flag of the program data having the fourth recording order, and turns ON the deletion candidate flag of the program data having the second recording order.

[0020]

As described above, when the accumulating capacity of the accumulating means 7 becomes almost full, the receiver for data broadcasting according to the embodiment of the present invention selects the program data that has already been viewed by a user as the candidate that is preferentially deleted. The control section 8 informs the user, who is viewing, of the program data selected as the deletion candidate on the monitor screen. If the user does not wish the deletion of the program data indicated as the deletion candidate, the control section 8 makes the above-mentioned program data on-viewing through the input section 10, and the deletion candidate can again be selected from the program data pieces other than the above-mentioned program data.

[0021]

Although the viewed range of the program data that is being viewed is only one part in the example, in case where the plural parts have already been viewed in one program data piece, the plural viewed ranges are stored in the memory means 11.

[0022]

Further, in case where the memory means 11 has a function for holding the information indicating whether the accumulated data has already been viewed or not, the control section 8 checks the information stored in the memory means 11, and if the accumulated data has already been viewed, the control section 8 can preferentially select this data as the deletion candidate. In this case, if there are data pieces having the same storage priority, the data that has not yet been viewed is left in the accumulating means for a longer time.

[0023]

Moreover, when the memory means 11 also holds the viewed range of the accumulated data, the control section 8 checks the information stored in the memory means 11, and if there is the viewed range in the accumulated data, the control section 8 can preferentially select this data as the deletion candidate. The memory means holds the viewed range, if the user is viewing the data, and if the viewed range is present in the data, the control section selects this range as the deletion candidate and represents that the data corresponding to the monitor screen is the deletion candidate, whereby the user can notice the data



that is to be deleted next. When a predetermined time has elapsed after the deletion candidate is selected, the corresponding data of the viewed section is deleted from the accumulating means. The data that has not yet been viewed does not become the deletion candidate, so that the data that has not yet been viewed is left in the accumulating means for a longer time.

[0024]

#### [EFFECT OF THE INVENTION]

As described above, the present invention has an advantage that, when the accumulating capacity becomes almost full, it selects the candidate of program data that is to be preferentially deleted from the data pieces already viewed by a user, the selected deletion candidate is informed to the user, who is viewing, through the monitor screen, and if the user does not with the deletion of the program indicated as the deletion candidate, the deletion candidate is again selected from the programs and data pieces other than the above-mentioned deletion candidate.

Fig. 1

- 1      Receiving section
- 2      Signal separating section
- 3      Switch
- 4      Decoding section
- 5      Display control section
- 6      Monitor

- 7      Accumulating means
- 8      Control section
- 9      Interpreting section
- 10     Input section
- 11     Memory

Fig. 2

- 1      Recording order
- 2      Program
- 3      Storage priority
- 4      Viewing information
- 5      On-viewing
- 6      Start time
- 7      End time
- 8      Recording?
- 9      Deletion candidate flag
- 10     Sports
- 11     Historical play
- 12     Drama
- 13     Software data
- 14     Song program
- 15     Not viewed
- 16     Now being viewed
- 17     YES
- 18     NO

19 OFF

20 ON